

REMARKS

Status of the Claims

Claims 1-29 are presently pending. Of these, claims 1-15 are nonelected, and have been withdrawn from consideration; claims 16-29 are elected. Nonelected claim 1, and elected claims 16 and 24, are independent.

Citation of Art

The art cited in Applicant's August 28, 2001 Information Disclosure Statement has been considered by the Examiner, as indicated by the Examiner-initialed PTO/SB08A and PTO/SB08B forms included with the Office action.

Objections to Disclosure

At page 14, in paragraph [063], "N-trichlorosilylpropyl-N,N,N-trimethylammonium chloride" has been changed to ---N-trichlorosilylpropyl-N,N,N-trimethylammonium chloride---, as required by the Examiner.

At page 38, in paragraph [0161], "bis(aminopropyl)" has been changed to ---bis(aminopropyldimethylsiloxy---; at page 53, in paragraph [0217], " α -aminopropyl" has been changed to --- α -aminopropyldimethylsiloxy---, and " ω -trimethyl" has been changed

to ---ω-trimethylsiloxo---. The last of these three changes is in accordance with the requirement of the Examiner, and the first two changes are presented for the purpose of consistency. It is respectfully submitted that the added ---dimethylsiloxo--- and ---siloxo--- are inherent, but nevertheless it is acknowledged that explicitly stating these terms provides a more complete identification of the specified polydimethylsiloxanes.

Requirement for New Corrected Drawings

As required by the Examiner, new drawings are submitted concurrently with this written Reply. These drawings are provided with a separate Transmittal of New Corrected Drawings. In accordance with the Examiner's instructions, the new drawings include corrections to the margins, and to the lines, numbers, and letters, as specified in items 5 and 10, respectively, of the Notice of Draftsperson's Patent Drawing Review.

Rejection of claims 24-26 under 35 U.S.C. § 112, Second Paragraph for Indefiniteness

It is respectfully submitted that claims 24-26, as originally presented, were in compliance with the requirements of 35 U.S.C. § 112, second paragraph. However, for the purpose

of expediting prosecution, these claims have been amended to delete the "at least" preceding "essentially".

Rejection of claims 16-18 and 20 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,531,813 (HENRY et al.) in view of U.S. Patent No. 5,102,763 (WINNIK et al.) and U.S. Patent No. 5,895,713 (MIYAZAKI et al.)

To assist in demonstrating the patentability of Applicants' invention over the teachings of the Examiner's references, aspects of the invention are discussed below. After this discussion, relevant teachings of the references, as well as particular points of the Examiner's arguments and also arguments in support of patentability, are presented.

1. Aspects of Applicants' Invention

Applicants' claimed composition, comprising fluoroelastomer and amorphous silica surface treated with organoaminosilane, is used, as disclosed, to prepare a surface layer - particularly, a surface layer of a surface treating member, particularly a fuser member, for a toner fusing system employed in electrostatographic reproduction. In the operation of such a fusing system, toner residing on a substrate, such as paper, is fed through a nip formed by fuser and support members, and the toner is fused to the paper by heat and pressure. (Application, paragraph [017], at

pages 4 and 5; Application, paragraph [028], at pages 6 and 7; Application, paragraphs [03]-05], at pages 1 and 2)

A potential problem to be addressed is that during this fusing process, toner can be offset from the paper to the fuser member (Application, paragraph [06], at page 2). A release agent can be applied to the fuser member surface, during the fusing process, to combat this offset (Application, paragraph [08], at page 2).

The working of this process is shown in Fig. 1 of the Application. Release agent 34, from sump 29, is transferred to fusing surface layer 13 of fuser member 10 (Application, paragraphs [0144] and [0147], at pages 35 and 36). Release agent coated fuser member 10 and support member 19 form nip 20; paper 21, carrying unfused toner images 22, passes through nip 20, thereby fusing toner images 22 to paper 21 (Application, paragraph [0148], at page 36).

The treated amorphous silica provides toughness and wear resistance to layers prepared from Applicant's fluoroelastomer and silica composition (Application, paragraph [074], at page 17). This composition, providing a fuser member surface layer, is represented in Figs. 2 and 3 of the application; these drawings show treated silica particles 28 in the fluoroelastomer of surface

layer 13 (Application, paragraphs [0153] and [0154], at page 37). This is the fuser member surface layer on which release agent 34 is coated, as discussed.

2. Teachings of the References, the Examiner's Arguments, and Arguments in Support of Patentability

HENRY et al. correspondingly discloses a fusing system for an electrostatographic process, with release agent applied to the fluoroelastomer surface layer of a fuser member to combat toner offset (column 1, lines 23-25; column 2, lines 11-13 and 26-31; column 5, lines 31-34 and 37-40). As seen in Fig. 1 of HENRY et al., polymeric release agent 22, fluid at operating temperatures, is applied to elastomer surface 2 of fuser roller 1 (column 5, lines 1-2, 13-15, 20-21, and 28-30). The HENRY et al. polymeric release agent is a polyorganosiloxane oil of specified formula (column 5, line 46 through column 6, line 12).

The Examiner cites column 7, line 22 through column 8, line 15 of HENRY et al. as disclosing a composition comprising a fusing system with release agent and a fluoroelastomer. However, it is respectfully submitted that the fusing system cannot be considered to be part of a "composition" - as this term is commonly understood, both in general use and in this art. And it is further respectfully submitted that the release agent, and the fluoroelastomer surface layer to which it is applied, cannot be

considered as forming a "composition" - once again, as this term is commonly understood, both in general use and in this art.

WINNIK et al. does concern electrostatographic fusing systems, and in fact discloses organoaminosilane treated amorphous silica particles. However, WINNIK et al. teaches this silica as being incorporated in the toner. (column 5, line 35 through column 6, line 44, and column 4, lines 30-35, as cited by the Examiner; and elsewhere throughout the reference).

MIYAZAKI et al. teaches treating the hydrophobic synthetic resin coating of an outdoor article with an organoaminosilane, with the purpose of this treatment being to prevent formation of rain streak soils. A wide variety of outdoor articles, such as concrete, signs, automobiles, buildings, and bridges, are disclosed. (column 1, lines 8-10 and 56-59; column 10, lines 8 and 27-39; column 12, line 36 through column 12, line 13)

Of course, MIYAZAKI et al. pertains to an art entirely unrelated to that of WINNIK et al. and HENRY et al. MIYAZAKI et al. and WINNIK et al. fail to provide any motivation for modifying the silica as disclosed in WINNIK et al. in accordance with the teaching of MIYAZAKI et al.

Further, whether the WINNIK et al. silica is left unchanged, or modified in any conceivable manner by the MIYAZAKI et al.

teaching, the three references here fail to provide any motivation for using the silica of WINNIK et al., which is taught in the WINNIK et al. patent as a toner component, in place of the HENRY et al. polyorganosiloxane oil release agent. In this regard, the references do not provide any disclosure or suggestion that a material (i.e., the silica) which is suitable for one purpose (i.e., as an ingredient of the toner in the fusing process) would also be suitable for a completely different purpose (i.e., as the release agent in the fusing process).

Another factor, demonstrating the lack of motivation for using the WINNIK et al. silica particles in place of the HENRY et al. polyorganosiloxane oil, is the total dissimilarity between the two materials. While the WINNIK et al. silica particles and HENRY et al. polyorganosiloxane oil both include silicon, it is too apparent to require discussion that they are completely different materials, with completely different properties.

Accordingly, there is absolutely no reason to conclude that the WINNIK et al. silica would be suitable as a release agent in the HENRY et al. electrostatographic toner fusing system - or, for that matter, in any other electrostatographic toner fusing system, as these systems are known in the art. In fact, any investigation

of this issue must necessarily establish that quite the opposite is true.

And even if the substitution of silica particles for release agent oil, in the HENRY et al. system, were effected, it is again noted that, as taught in HENRY et al., the release agent oil is used by means of applying it to the fluoroelastomer surface layer; and indeed, this is how release agents are conventionally used in the art. As discussed previously, just as release agent and its target surface would not be considered as forming a "composition", neither would silica particles and such a surface be so considered.

The Examiner concludes that the thusly substituted silica would be "well dispersed" in the HENRY et al. fluoroelastomer. In fact, at the time when the silica would be applied to the fluoroelastomer, this fluoroelastomer of course would be in the form of an already finished surface layer of the fuser member; accordingly, the silica particles would not disperse into the fluoroelastomer.

In view of the foregoing, claims 16-18 and 20 are patentable over the combined teachings of HENRY et al., WINNIK et al., and MIYAZAKI et al.

Rejection of claims 19 and 21-29 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,531,813 (HENRY et al.) in view of U.S. Patent No. 5,102,763 (WINNIK et al.) and U.S. Patent No. 5,895,713 (MIYAZAKI et al.) as applied to claims 16-18, and further in view of U.S. Patent No. 4,758,618 (ITO et al.) and U.S. Patent No. 6,350,306 (TONELLI et al.)

ITO et al. and TONELLI et al. do not cure the deficiencies of HENRY et al., WINNIK et al., and MIYAZAKI et al. For this reason alone, without the necessity for discussing any other reasons that may be applicable, claims 19 and 21-29 are patentable over the combined teachings of HENRY et al., WINNIK et al., MIYAZAKI et al., ITO et al., and TONELLI et al.

First Rejection of claims 24-29

Claims 24-29 all recite a process which is for preparing a coating composition comprising fluoroelastomer and organoamino-silane treated amorphous silica, and which combats gel defects in the composition. All of these process claims 24-29 specify that, in the process for preparing the coating composition, a solution or dispersion is provided, and that a certain condition - i.e., dispersion of crosslinking agent, accelerator, fluoroelastomer, and silica throughout the solvent - is maintained at least until a particular objective is reached. This recited objective is the essential absence of gels.

In addition to the foregoing process condition set forth in claim 24, the following claims 25-29 recite yet further process conditions, with each claim depending from the one immediately preceding. For instance, claim 25 provides that at least the solvent, fluoroelastomer, and treated silica are mixed under high shear, and claim 26 specifies that, after the high shear mixing, mixing without high shear is conducted; claims 27-29 of course all add further features.

The Examiner does not cite any of the foregoing references as disclosing or suggesting a gel combating process for preparing a fluoroelastomer and silica coating, nor does he even refer to any of these references as disclosing or suggesting any of the particular process features as discussed above. And in fact, the references that he applies do not disclose or suggest the process of the invention, as recited in claims 24-29. Claims 24-29 accordingly are patentable over the cited references.

Rejection of claims 16-18 and 20 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,485,835 (HECKS et al.) or U.S. Patent No. 6,261,688 (KAPLAN et al.), with each in view of U.S. Patent No. 5,102,763 (WINNIK et al.) and U.S. Patent No. 5,895,713 (MIYAZAKI et al.)

For the purpose of addressing the issue of patentability with respect to Applicants' claims 16-18 and 20, the teachings of both

HECKS et al. and KAPLAN et al. are substantively the same as those of HENRY et al. Moreover, in this rejection employing HECKS et al. and KAPLAN et al. as alternate primary references, the Examiner cites WINNIK et al. and MIYAZAKI et al. for the same reasons that he uses in previously applying these latter two references with HENRY et al.

Accordingly, for the same reasons as stated with respect to the combined teachings of HENRY et al., WINNIK et al., and MIYAZAKI et al., claims 16-18 and 20 also are patentable over the teachings of HECKS et al. or KAPLAN et al., combined with the teachings of WINNIK et al. and MIYAZAKI et al.

Rejection of claims 19 and 21-29 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,485,835 (HECKS et al.) or U.S. Patent No. 6,261,688 (KAPLAN et al.), with each in view of U.S. Patent No. 5,102,763 (WINNIK et al.) and U.S. Patent No. 5,895,713 (MIYAZAKI et al.) as applied to claims 16-18, and further in view of U.S. Patent No. 4,758,618 (ITO et al.) and U.S. Patent No. 6,350,306 (TONELLI et al.)

Here, the Examiner cites ITO et al. and TONELLI et al. for the same reasons that he uses in previously applying these two references with HENRY et al.

Accordingly, for the same reasons as stated with respect to the combined teachings of HENRY et al., WINNIK et al., MIYAZAKI et al., ITO et al., and TONELLI et al., claims 19 and 21-29 are

patentable over the teachings of HECKS et al. or KAPLAN et al., combined with the teachings of WINNIK et al., MIYAZAKI et al., ITO et al., and TONELLI et al.

Second Rejection of claims 24-29

Correspondingly, with respect to this second rejection of claims 24-29, claims 24-29 are patentable for the same reasons as stated with respect to the first rejection of claims 24-29.

CONCLUSION

It is respectfully submitted that, for the reasons as stated, the claims presently pending in this Application are patentable over the art of record, and the Application is otherwise in condition for allowance.

Withdrawal of the restriction requirement, withdrawal of the objections and rejections, and allowance of all pending claims, is respectfully requested. It is further respectfully requested that this allowance be set forth in the next Official Action for the Application.

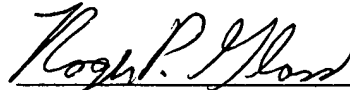
Favorable action is respectfully solicited.

The Commissioner is authorized to charge any additional amount or fee required for acceptance of this reply as timely and complete to Deposit Account No. 50-1381.

No.10013.A03
PAT00003.A03

Should the Examiner have any questions or comments regarding this matter, the undersigned may be contacted at the below-listed telephone number.

Respectfully submitted,
Jerry A. PICKERING et al.

A handwritten signature in cursive script, appearing to read "Roger P. Glass", is written over a horizontal line.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

At page 14, paragraph [063] has been amended as follows:

[063] Particular amine functional organohalosilanes which may be used include 2-[2-(trichlorosilyl)ethyl]pyridine and [N-trichlorosilylpropyl-N,N,N-trimethylammonium] N-trichlorosilylpropyl-N,N,N-trimethylammonium chloride.

At page 38, paragraph [0161] has been amended as follows:

[0161] PS513 [bis(aminopropyl)] bis(aminopropyldimethylsiloxy) terminated polydimethylsiloxane wetting agent, from United Chemical Technologies, Inc., Bristol, PA

At pages 52 and 53, paragraph [0217] has been amended as follows:

[0217] A Heidelberg Digimaster™ 9110 electrophotographic process was used to apply unfused toner to paper substrates, with this toner being fixed to the paper by the HD9110 fuser. To compare the fuser rollers of Example 8 and Comparative Example 10, they were employed with this fuser, which was used to compare the respective performances of these rollers. For this purpose, the release oil of the HD9110 fuser was changed from the standard 60,000 cSt release fluid to a blend of 87.5

weight percent DC200 and 12.5 weight percent of an [α -amino-propyl] α -aminopropyldimethylsiloxyl, [ω -trimethyl] ω -trimethyl-siloxyl terminated polydimethylsiloxane with a number average molecular weight of 12,000. The rate of application was 2.5 milligrams per copy.

In the Claims:

24. (Amended) A process for preparing a surface contacting member coating composition, comprising providing a solution or dispersion comprising solvent, at least one fluoroelastomer, and amorphous silica surface treated with at least one organoaminosilane, wherein the at least one fluoroelastomer and the amorphous silica surface treated with at least one organoaminosilane are dispersed throughout the solvent, and also providing that a bisphenol curing system comprising at least one bisphenol crosslinking agent and at least one accelerator also is dispersed throughout the solvent, with the at least one bisphenol crosslinking agent and the at least one accelerator being dispersed throughout the solvent, together with the at least one fluoroelastomer and the amorphous silica surface treated with at least one organoaminosilane, at least until gels are [at least] essentially absent from the solution or dispersion.

25. (Amended) The process of claim 24 comprising mixing under high shear the solution or dispersion comprising solvent, at least one fluoroelastomer, and amorphous silica surface treated with at least one organoaminosilane, and maintaining the solution or dispersion, having dispersed therein the bisphenol curing system comprising at least one bisphenol crosslinking agent and at least one accelerator, at least until gels are [at least] essentially absent from the solution or dispersion.

26. (Amended) The process of claim 25 comprising:

(a) mixing under high shear a solution or dispersion comprising:

(i) at least one fluoroelastomer;

(ii) amorphous silica surface treated with at least one organoaminosilane; and

(iii) solvent

(b) adding to the solution or dispersion a bisphenol curing system comprising at least one bisphenol crosslinking agent and at least one accelerator; and

(c) mixing, without high shear, the solution or dispersion with the bisphenol curing system therein, at least until gels are [at least] essentially absent from the solution or dispersion.